Maximum Instruction Time : 0

Question Number : 51 Question Id : 7225444852 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dimensions of permeability is

Options :

1. ✔ $MLT^{-2}A^{-2}$

2. ✖ $MLT^{-1}A^{-2}$

3. ✖ $MLT^{-2}A^{-1}$

4. ✖ $MLT^{-1}A^{-1}$

Question Number : 52 Question Id : 7225444853 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If velocity (V), force (F) and energy (E) are taken as fundamental units, then dimensional formula for mass will be

Options :

1. ✖ V^0FE^2

2. ✖ $VF^{-2}E^0$

3. ✖ $V^{-2}F^0E$

4. ✔ $V^{-2}F^{0}E$

Question Number : 53 Question Id : 7225444854 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Vector A extends from the origin to a point having polar coordinates $(7, 70^0)$ and vector B extends from the origin to a point having polar coordinates $(4, 130^0)$. Find A • B

Options :

1. ✖ 28

2. ✔ 14

3. ✖ 0

4. ✖ 7

Question Number : 54 Question Id : 7225444855 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If two vectors $2\hat{\imath} + 3\hat{\jmath} - \hat{k}$ and $-4\hat{\imath} - 6\hat{\jmath} - \lambda\hat{k}$ are parallel to each other then value of λ be

Options :

1. ✖ 2

2. ✔ 4

3. ✖ 0

4. ✖ 6

Question Number : 55 Question Id : 7225444856 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The coefficient of static friction between contact surfaces of two bodies is 1. The contact surface of one body supports the other till the inclination is less than

Options :

1. ✖ 30^0

2. ✔ 45^0

3. ✖ 60^0

4. ✖ 90^0

Question Number : 56 Question Id : 7225444857 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A smooth block is released from rest on a 45^0 inclined plane and it slides a distance 'd'. The time taken to slide is 'n' times that on a smooth inclined plane. The coefficient of friction is

Options :

1. ✔ $\mu_k = 1 - \frac{1}{n^2}$

2. ✖ $\mu_k = \sqrt{1 - \frac{1}{n^2}}$

3. ✖ $\mu_k = \frac{1}{1-n^2}$

4. ✖ $\mu_k = \sqrt{\frac{1}{1-n^2}}$

Question Number : 57 Question Id : 7225444858 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is projected at an angle other than 90^0 with the horizontal with some velocity. If the time of ascent of the body is 1second, then the maximum height it can reach is (Take g=10ms^{-2})

Options :

1. ✔ 5 m

2. ✖ 10 m

3. ✖ 2.5 m

4. ✖ 75 m

Question Number : 58 Question Id : 7225444859 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bullet fired from a gun falls at a distance half of its maximum range. The angle of projection of the bullet is

Options :

1. ✖ 45^0

2. ✖ 60^0

3. ✖ 30^0

4. ✔ 15^0

Question Number : 59 Question Id : 7225444860 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is thrown vertically upwards with a velocity. Select the incorrect statements from the following

I. Both velocity and acceleration are zero at its highest point.

II. Velocity is maximum and acceleration is zero at the highest point

III. Velocity is maximum and acceleration is 'g' downwards at its highest point

Options :

1. ✔ I,II and III

2. ✖ II and III

3. ✖ I and II

4. ✖ I and III

Question Number : 60 Question Id : 7225444861 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A person standing on a tower of height 60 m throws an object upwards with velocity of 40 m/s at an angle 30^0 to the horizontal. Find the total time taken by the object to gain maximum height and fall on the ground (take g= 10 m/s^2).

Options :

1. ✖ 3 s

2. ✖ 20 s

3. ✔ 6 s

4. ✖ 16 s

Question Number : 61 Question Id : 7225444862 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bucket full of water is drawn up by a person. In this case the work done by the gravitational force is

Options :

1. ✔ Negative because the force and displacement are in opposite directions

2. ✖ Positive because the force and displacement are in the same direction

3. ✖ Negative because the force and displacement are the same direction

4. ✖ Positive because the force and displacement are in opposite direction

Question Number : 62 Question Id : 7225444863 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a long spring is stretched by x cm, its potential energy is U. If the spring is stretched by Nx cm, the potential energy stored in it will be

Options :

1. ✖ U/N

2. ✖ NU

3. ✔ N^2U

4. ✖ U/N^2

Question Number : 63 Question Id : 7225444864 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a non-renewable source of energy?

Options :

1. ✔ Coal

2. ✖ Solar

3. ✖ Geothermal

4. ✖ Tidal

Question Number : 64 Question Id : 7225444865 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a class room has dimensions 20x15x5 m^3 and reverberation time 1.5 sec, the total absorption of all surfaces and the average absorption coefficient will be

Options :

1. ✖ 0.7 and 69

2. ✔ 69 and 0.07

3. ✖ 6.9 and 0.7

4. ✖ 0.69 and 0.7

Question Number : 65 Question Id : 7225444866 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A source of sound of frequency 450 cycles/sec is stationary but an observer is moving towards the source with 34 m/sec speed. If the speed of sound is 340 m/sec, the apparent frequency will be

Options :

1. ✖ 410 cycles/sec

2. ✖ 500 cycles/sec

3. ✖ 550 cycles/sec

4. ✔ 495 cycles/sec

Question Number : 66 Question Id : 7225444867 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A simple pendulum has a time period T in vacuum. Its time period when it is completely immersed in a liquid of density one-eighth of the density of material of the bob is

Options :

1. ✖ $\sqrt{\frac{7}{8}}T$

2. ✖ $\sqrt{\frac{5}{8}}T$

3. ✖ $\sqrt{\frac{3}{8}}T$

4. ✔ $\sqrt{\frac{8}{7}}T$

Question Number : 67 Question Id : 7225444868 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle executes simple harmonic motion represented by displacement function as $x(t) = A \sin(\omega t + \phi)$. If the position and velocity of the particle at $t = 0$ s are 2 cm and 2ω cm s^{-1} respectively, then its amplitude is $x\sqrt{2}$ cm where the value of x is

Options :

1. ✔ 2

2. ✖ $2\sqrt{2}$

3. ✖ 4

4. ✖ 1

Question Number : 68 Question Id : 7225444869 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An observer standing between two parallel cliffs emits an intense sound note. If two successive echoes are heard after 5 s and 7 s, then distance between the cliffs is (velocity of sound is 340 m/s)

Options :

1. ✖ 850 m

2. ✖ 1190 m

3. ✔ 2040 m

4. ✖ 340 m

Question Number : 69 Question Id : 7225444870 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

M grams of steam at 100°C is mixed with 200 g of ice at its melting point in a thermally insulated container. If it produced liquid water at 40°C [heat of vaporization of water is 540 cal/g and heat of fusion of ice is 80 cal/g] the value of M is

Options :

1. ✖ 20

2. ✖ 80

3. ✔ 40

4. ✖ 10

Question Number : 70 Question Id : 7225444871 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which type of ideal gas will have the largest value for $C_p - C_v$?

Options :

1. ✖ Polyatomic

2. ✖ Diatomic

3. ✖ Monoatomic

4. ✔ The value will be the same for all

Question Number : 71 Question Id : 7225444872 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In thermodynamics, heat and work are

Options :

1. ✔ Path functions

2. ✖ Intensive thermodynamic state variables

3. ✖ Extensive thermodynamic state variables

4. ✖ Point functions

Question Number : 72 Question Id : 7225444873 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For an adiabatic expansion of an ideal gas, the fractional change in its pressure is equal to (where γ is the ratio of specific heats):

Options :

1. ✖ $-\gamma\frac{V}{dV}$

2. ✔ $-\gamma\frac{dV}{V}$

3. ✖ $-\frac{1}{\gamma}\frac{V}{dV}$

4. ✖ $-\frac{1}{\gamma}\frac{dV}{V}$

Question Number : 73 Question Id : 7225444874 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following processes must violate the first law of thermodynamics?

Options :

1. ✔ $W > 0, Q > 0,$ and $\Delta E_{int} < 0$

2. ✖ $W > 0, Q < 0,$ and $\Delta E_{int} > 0$

3. ✖ $W < 0, Q > 0,$ and $\Delta E_{int} < 0$

4. ✖ $W > 0, Q < 0,$ and $\Delta E_{int} = 0$

Question Number : 74 Question Id : 7225444875 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The critical angle for total internal reflection is maximum for

Options :

1. ✖ Red light

2. ✖ Blue light

3. ✖ Ultraviolet rays

4. ✔ Infrared rays

Question Number : 75 Question Id : 7225444876 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Photon of frequency (f) has a momentum (p) associated with it. If c is the velocity of light, the momentum is

Options :

1. ✔ hf/c

2. ✖ f/c

3. ✖ hfc

4. ✖ hf/c^2

Chemistry

Section Id :	72254498
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 76 Question Id : 7225444877 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bohr's theory can be applied to which of the following ions?

Options :

1. ✖ Na^+